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PATENTS, TRADEMARKS & RELATED INTELLECTUAL PROPERTY MATTERS

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April 22, 2002

Commissioner for Patents

Washington, DC 20231

In re the Application

Patent Examiner: Not Assigned

Gregory M. Quist and Hanno Ix

Art Unit: 2877

For: IDENTIFICATION OF PARTICLES IN FLUID

Serial No.: 09/922,497

Filed: August 03, 2001

Enclosed is a Second Information Disclosure Citation form listing 21 references, and copies of the patents along with a description listing of most of the patents..

The Commissioner of Patents and Trademarks is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Account No. 06-1985.

I hereby certify that this paper or fee is being deposited with the United States Postal Service as First Class Mail on April 22, 2002 and is addressed to the Commissioner for Patents, Box DD, Washington, DC 20231.

Respectfully submitted,

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Enclosures

PATENT SEARCH LIST DESCRIPTIONS

6,120,734	Lackie	Shows, in his Fig. 1, that he directs light from a source 22 and through a semi-reflecting mirror 26 and through a lens to a focus region 55 where particles are located. Light from the focus 55 is directed upward through the lens and through the mirror 26 to a photodetector 24 that detects fluorescing particles.
6,118,531	Hertel	Identifies particles by light scatter. He directs three laser beams through a point in a space where a fluid with particles lies. Each laser beam is received by a separate detector 5 lying directly in line with the laser beam. Then, he says he applies "mathematical calculations like scattering theory" to determine particle shape and type.
6,100,541	Nagle	Not especially relevant because it relates to detecting fluid in devices that use fluid for computation.
6,023,324	Myers	Detects abrasive particles in a miniature blasting machine where he detects fluctuations in the transmission of light through a passage.
5,999,256	Jones	Detects the size of particles. Particles pass through a square passage in a light cell 14. The device detects the variation in light intensity by particles lying in the way of the concentrated light beam.
5,737,078	Takarada	Shows a "flow cell" with a passage of square cross-section and a square outside, for classifying blood cells. A laser beam is focused onto a spot at the center of the passage, and light scattered in a forward direction is measured. Also, a flash lamp causes a particle to fluoresce, and such light is also concentrated onto a detector.
5,534,999	Koshizuka	Shows a laser beam that is converged to a point in a stream of fluid that contains particles. The light is diffracted by the particles and the resulting light is detected by a photodetector 4. The system detects particles of 0.2 micrometers, where the light wavelength is 0.67 micrometers.
5,436,465	Borden	Shows a vacuum chamber. A laser beam passes through the vacuum chamber and scatt red light is detected by detector 201.

5,414,508	Takahashi	Shows, in Fig. 2, a flow cell with a passage of square cross-section and an outside of square cross-section. A light beam 7 passes through a half-transparent mirror 2 and through the flow cell and through the flow path 1a of biological substances. The collimated light is concentrated onto a photo multiplier 10 that detects absorption of light at certain wavelengths.
5,247,340	Ogino	Passes fluid with cells through a location A in a flow cell 19. Light is concentrated at the location A, and light from fluorescing cells that emerges within a solid angle of about 60° is directed onto video cameras 20, 21.
5,125,737	Rodriguez	Shows a cylindrical passage portion in a cylindrical glass cell 10. A laser output is focused to a spot at the aperture 12. Light scattered in a horizontal plane by up to 60° is detected by a single photodetector. Another device 199 (Fig. 6C on his sheet 2) has a passage and outside both of square cross-section.
4,952,055	Wyatt	Describes a device for measuring the refraction index of fluids. His Fig. 5 shows a cylinder with a capillary 11 through which fluid is flowed. Multiple light detectors 26 lie in the plane of the capillary to detect scattering that indicates the refraction index of the fluid.
4,942,305	Sommmer	Shows a laser that is directed into a hollow sphere with a defuse reflective surface, and is used to detect particles in an aerosol.
4,906,094	Ashida	Describes a split laser beam with fine particles passing through one beam to a single light detector.
4,728,190	Knollenberg	Shows, in his Fig. 4A, a device for detecting and measuring the size of particles in a fluid. Light from a laser 46 passes through cylindrical lenses 51,52 to provide a thin beam that covers the entire cross-section of a passage 45 through which fluid particles are passing. The laser beam passes out of a part-spherical exit lens 41 and is absorbed by a mask 44. Light scattered by particles is reflected back and forth between the internal surfaces of a pair of mirrors 55, 56 and reaches a photodiode 53. This patent does not use a plurality of photodetectors to create a pattern indicating the amplitude of light scattered in each of multiple directions by a particle.

4,565,448	Abbott	Counts particles in a fluid that passes through a cylindrical bore. Light is detected, which is scattered from the particle in a direction perpendicular to the beam.
4,265,538	Wertheimer	Detects fluorescence of particles passing through a rectangular passage in a cell that has a rectangular outside.

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